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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,731	08/28/2001	Norihiko Araki	KPM-01801	5139

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EXAMINER

SCHEUERMANN, DAVID W

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/940,731

Applicant(s)

ARAKI, NORIHIKO

Examiner

David W. Scheuermann

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "power supply unit", must be shown or the feature(s) canceled from the claim(s). Also, in figure 6, the second occurrence of "V PHASE LINE" may be replaced with --W PHASE LINE--. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 7 and 8, it is not clear whether there is a difference between "a drive" (claim 1) and "a first drive".

As to claims 9-16, the meets and bounds of "power supply unit" are not clear. Is this the source of the power to the control unit 3, drive operator 6, or output circuit 7?

Claim 16 recites the limitation "said first drive". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, and 9 -11 are rejected under 35 U.S.C. 102(b) as being anticipated by Takekawa, US 5783917. Takekawa shows the invention of a brushless DC motor 10; supplying starting current to the motor, see 71 in figure 9; measuring an induced voltage, see block 74; and supplying a drive current for the armature coil in response to the said induced voltage, see block 75. Note that 20 is considered a "power supply unit."

Re claims 2 and 10, note position detection circuit 50. As to claims 3 and 11, note in column 7, lines 15-39, that the measuring is executed after the supplying of the starting current.

Claims 1-2, 4, 9-10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Cassat et al., US 5245256. Cassat et al. shows the invention of a brushless DC motor 100; supplying starting current to the motor, column 3, lines 57-66; measuring an induced voltage, column 3, lines 57-66; and supplying a drive current for the armature coil in response to the said induced voltage, see column 11, lines 15-17. Note that 107 is considered a "power supply unit."

Re claims 2 and 10, note column 3, line 65. As to claims 4 and 12, note in column 3, lines 59-63, the back EMF is measured on the phase not energized.

Claims 1, 5-7, 9, 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Makaran, US 5744921. Makaran shows the invention of a brushless DC motor 102; having power supply 104, figure 1; supplying starting current to the motor; measuring an induced voltage, as described in the abstract; and supplying a drive current, see figure 5. Note that 104 is considered a "power supply unit."

Re claims 5 and 13, note the logic flowchart depicted in figure 4 and figure 5. If there is no movement, 322, after the application of a first starting current, 318, a second starting current, 336, is supplied.

As to claims 6 and 14, note the abstract teaches stopping the rotor before reverse windings 114 are energized.

Claims 7 and 15 call for the motor to accelerate to a predetermined speed. Makaran teaches inputting set-point speed signal 146 into the motor controller, as shown in figure 1 to achieve such an effect. Note in column 10, lines 24-34 that in the system of Makaran supplies a varied duty cycle to provide closed-loop control. Since measured speed is compared to set speed, it is inherent that measured speed is used to control the drive current. Furthermore, because the measured speed signal is based on rotor position and rotor position in turn is determined based on induced voltage it is inherent that the control of drive current is based on any of measured speed, rotor position and induced voltage. Therefore, in the closed-loop control system of Makaran drive current is based on measured speed and rotor position and induced voltage.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 8 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Makaran. Makaran discloses the invention substantially as claimed as set forth in the rejection of claim 1 above. Makaran does not expressly disclose accelerating the motor the predetermined speed at maximum torque. However Makaran provides that the PWM signal may be varied up to 100%, see column 6, lines 40-43, permitting the motor to operate at maximum torque. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to set the PWM signal to 100%. One of ordinary skill in the art would have been motivated to do this cause the rotor to accelerate to the predetermined speed in the shortest time. Since measured speed is compared to set speed, it is inherent that measured speed is used to control the drive current.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Endo et al. and Moreira show a speed detection circuit outputting a signal as a function of a back EMF signal. Carobolante et al. teach an

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advantage of back-electromotive force sensing over Hall-sensors in column 1, lines 27-34.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David W. Scheuermann whose telephone number is (703) 308-9637. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

dws
March 7, 2003


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